In the Claims:

Please amend the claims as follows:

1. (currently amended) A method to locate a fault from one end of a section of a power line by means of measurements of current, voltage and angles between the phases at a first end of said section, the method comprising:

calculating symmetrical components of currents for said current and voltage measurement at said first end,

calculating a value of impedance for an extra link between the terminals with the impedance for the positive sequence equal to:

$(\underline{Z}_{1LB\&AB} = \frac{\underline{Z}_{1LB}\underline{Z}_{1AB}}{\underline{Z}_{1LB} + \underline{Z}_{1AB}})$ where:

$\underline{Z}_{1AB}$ = impedance for the positive sequence of the extra link,

$\underline{Z}_{1LA}$ = positive-sequence impedance of the healthy line,

determining a compensation for the shunt capacitance with the aid of an equation of the form:

$$B_2^{comp\_1}(d_{comp\_1})^2 + B_1^{comp\_1} d_{comp\_1} + B_0^{comp\_1} = 0 \text{ where:}$$

$$B_2^{comp\_1} = A_{2\_Re}^{comp\_1} A_{00\_Im}^{comp\_1} - A_{2\_Im}^{comp\_1} A_{00\_Re}^{comp\_1}$$

$$B_1^{comp\_1} = A_{1\_Re}^{comp\_1} A_{00\_Im}^{comp\_1} - A_{1\_Im}^{comp\_1} A_{00\_Re}^{comp\_1}$$

$$B_0^{comp\_1} = A_{0\_Re}^{comp\_1} A_{00\_Im}^{comp\_1} - A_{0\_Im}^{comp\_1} A_{00\_Re}^{comp\_1}$$

determining the zero-sequence current from the healthy line of a section of parallel power

lines,

calculating a distance to a fault for the parallel line section,

calculating the distance to the fault from said first end using a quadratic equation of the form:

$B_2 d^2 + B_1 d + B_0 = 0$ where:

$B_2 = A_{2\_Re} A_{00\_Im} - A_{2\_Im} A_{00\_Re}$

$B_1 = A_{1\_Re} A_{00\_Im} - A_{1\_Im} A_{00\_Re}$

$B_0 = A_{0\_Re} A_{00\_Im} - A_{0\_Im} A_{00\_Re}$ <u>and</u>

<u>locating the fault utilizing the calculated distances</u>.

2. (previously amended) The method according to claim 1, wherein the distance to the fault is calculated using an equation of the form:

$$\underline{K}_1 \underline{Z}_{1L} d^2 + (\underline{L}_1 \underline{Z}_{1L} - \underline{K}_1 \underline{Z}_{AA\_p}) d - \underline{L}_1 \underline{Z}_{AA\_p} + R_F \underline{M}_1 \frac{(\underline{a}_{F1} \Delta \underline{I}_{AA1} + \underline{a}_{F2} \underline{I}_{AA2})}{\underline{I}_{AA\_p}} = 0 \quad (8)$$

where:

$\underline{Z}_{AA\_p} = \frac{\underline{V}_{AA\_p}}{\underline{I}_{AA\_p}}$ – calculated fault loop impedance.

3. (previously amended) The method according to claim 1, wherein the distance to the fault is calculated using an equation of the form:

$\underline{A}_2 d^2 + \underline{A}_1 d + \underline{A}_0 + \underline{A}_{00} R_F = 0$

where:

$\underline{A}_2 = A_{2\_Re} + jA_{2\_Im} = \underline{K}_1 \underline{Z}_{1LA}$

$$\underline{A}_1 = A_{1\_Re} + jA_{1\_Im} = \underline{L}_1\underline{Z}_{1LA} - \underline{K}_1\underline{Z}_{AA\_p}$$

$$\underline{A}_0 = A_{0\_Re} + jA_{0\_Im} = -\underline{L}_1\underline{Z}_{AA\_p}$$

$$A_{00\_Re} + jA_{00\_Im} = \frac{\underline{M}_1(\underline{a}_{F1}\Delta\underline{I}_{AA1} + \underline{a}_{F2}\underline{I}_{AA2})}{\underline{I}_{AA\_p}}$$

$$\underline{Z}_{AA\_p} = \frac{\underline{V}_{AA\_p}}{\underline{I}_{AA\_p}} = \text{calculated fault loop impedance}$$

$\underline{K}_1$, $\underline{L}_1$, $\underline{M}_1$ = coefficients gathered in TABLE 3.

4. (previously amended) The method according to claim 1, further comprising:

determining source impedance at said first end as a representative value, and

determining a value for source impedance at said second end as a representative value.

5. (previously amended) The method according claim 1, further comprising

calculating symmetrical components of currents for said current and voltage measured at said first end by:

inputting instantaneous phase voltages,

filtering the values to determine the phasors, and

calculating phasors of symmetrical components of voltages.

6. (previously amended) The method according to claim 1, further comprising

calculating symmetrical components of currents for said current and voltage measured at said first end by:

inputting instantaneous phase currents and instantaneous zero-sequence current from a

healthy line,

filtering the values to determine the phasors, and

calculating phasors of symmetrical components of currents.

7. (previously amended) The method according to claim 1, further comprising determining a compensation for shunt capacitance by means of an equation of the form:

$$\underline{A}_2^{comp\_1}(d_{comp\_1})^2 + \underline{A}_1^{comp\_1} d_{comp\_1} + \underline{A}_0^{comp\_1} + \underline{A}_{00}^{comp\_1} R_F = 0 \qquad (21a)$$

where:

$$\underline{A}_2^{comp\_1} = A_{2\_Re}^{comp\_1} + jA_{2\_Im}^{comp\_1} = \underline{K}_1 \underline{Z}_{1L}^{long}$$

$$\underline{A}_1^{comp\_1} = A_{1\_Re}^{comp\_1} + jA_{1\_Im}^{comp\_1} = \underline{L}_1 \underline{Z}_{1L}^{long} - \underline{K}_1 \underline{Z}_{A\_p}^{comp\_1}$$

$$\underline{A}_0^{comp\_1} = A_{0\_Re}^{comp\_1} + jA_{0\_Im}^{comp\_1} = -\underline{L}_1 \underline{Z}_{A\_p}^{comp\_1}$$

$$\underline{A}_{00}^{comp\_1} = A_{00\_Re}^{comp\_1} + jA_{00\_Im}^{comp\_1} = \frac{\underline{M}_1(\underline{a}_{F1}\Delta\underline{I}_{AA1} + \underline{a}_{F2}\underline{I}_{AA2})}{\underline{I}_{A\_p}^{comp\_1}}$$

$\underline{Z}_{A\_p}^{comp\_1} = \dfrac{\underline{V}_{A\_p}}{\underline{I}_{A\_p}^{comp\_1}}$ – fault loop impedance calculated from:

$\underline{V}_{A\_p}$ – original (uncompensated) fault loop voltage,

$\underline{I}_{A\_p}^{comp\_1} = \underline{a}_1 \underline{I}_{A1\_comp\_1} + \underline{a}_2 \underline{I}_{A2\_comp\_1} + \underline{a}_0 \underline{I}_{A0\_comp\_1}$ – fault loop current composed of the positive, negative and zero sequence currents obtained after deducing the respective capacitive currents from the original currents, and

$\underline{K}_1$, $\underline{L}_1$, $\underline{M}_1$ = coefficients gathered in TABLE 3.

8. (previously amended) The method according to claim 1, further comprising measuring the source impedance $\underline{Z}_{1sA}$ at said first end A.

9. (previously amended) The method according to claim 1, further comprising:

measuring the source impedance $\underline{Z}_{1sB}$ at said second end,

sending a communication of the measured value of source impedance $\underline{Z}_{1sB}$ at said second end to a fault locator at said first end.

10. (previously amended) The method according to claim 1, further comprising

determining the distance to a single phase to ground fault without measurements from an operating healthy parallel line by means of complex coefficients $\underline{P}_0$ according to a formula of the form:

$$\underline{P}_0 = \frac{\underline{Z}_{0LB} - \underline{Z}_{0m}}{\underline{Z}_{0LA} - \underline{Z}_{0m}}$$

and $\underline{K}_1$, $\underline{L}_1$, $\underline{M}_1$ according to

$$\underline{K}_1 = -\underline{Z}_{1LA}(\underline{Z}_{1sA} + \underline{Z}_{1sB} + \underline{Z}_{1LB})$$

$$\underline{L}_1 = -\underline{K}_1 + \underline{Z}_{1LB}\underline{Z}_{1sB}$$

$$\underline{M}_1 = \underline{Z}_{1LA}\underline{Z}_{1LB} + \underline{Z}_{1LA}(\underline{Z}_{1sA} + \underline{Z}_{1sB}) + \underline{Z}_{1LB}(\underline{Z}_{1sA} + \underline{Z}_{1sB}).$$

11. (previously amended) The method according to claim 1, further comprising

determining the distance to a single phase to ground fault without measurements from switched off and grounded parallel line by means of complex coefficients $\underline{P}_0$ according to

$$\underline{P}_0 = -\frac{\underline{Z}_{0LB}}{\underline{Z}_{0m}}$$

and $\underline{K}_1$, $\underline{L}_1$, $\underline{M}_1$ according to

$\underline{K}_1 = -\underline{Z}_{1LA}$

$\underline{L}_1 = \underline{Z}_{1LA} + \underline{Z}_{1sB}$

$\underline{M}_1 = \underline{Z}_{1sA} + \underline{Z}_{1sA} + \underline{Z}_{1LA}$.

12. (previously amended) The method according to claim 1, further comprising determining the distance to a single ground fault using a first order formula of the form:

$$d = \frac{imag\{\underline{V}_{AA\_p}[3(\underline{I}_{AA0} - \underline{P}_0 \underline{I}_{AB0})]^*\}}{imag\{(\underline{Z}_{1LA} \underline{I}_{AA\_p})[3(\underline{I}_{AA0} - \underline{P}_0 \underline{I}_{AB0})]^*\}}.$$

13. (previously amended) The method according to claim 1, further comprising determining the distance to a phase-to-phase ground fault using pre-fault measurements and a first order formula of the form:

$$d = \frac{imag\{\underline{V}_{AA\_p}[\underline{W}(\underline{I}_{AA0} - \underline{P}_0 \underline{I}_{AB0})]^*\}}{imag\{(\underline{Z}_{1LA} \underline{I}_{AA\_p})[\underline{W}(\underline{I}_{AA0} - \underline{P}_0 \underline{I}_{AB0})]^*\}}.$$

14. (previously amended) The method according to claim 1, further comprising determining the distance to a phase-to-phase ground fault avoiding pre-fault measurements and using a first order formula of the form:

$$d = \frac{imag[(\underline{V}_a + \underline{V}_b)(\underline{I}_{AA0} - \underline{P}_0 \underline{I}_{AB0})^*]}{imag[\underline{Z}_{1LA}(\underline{I}_a + \underline{I}_b + 2\underline{k}_0 \underline{I}_{AA0} + 2\underline{k}_{0m} \underline{I}_{AB0})(\underline{I}_{AA0} - \underline{P}_0 \underline{I}_{AB0})^*]}.$$

15. (previously amended) A device for locating a fault from one end of a section of a power line having means for receiving and storing measurements of current, voltage and angles

between the phases at one first end, means for receiving and storing a detection of a fault condition between said first and second ends, the device comprising:

means for calculating symmetrical components of currents for said current and voltage measured at said first end,

means for calculating a value of impedance for an extra link between the terminals,

means for determining a compensation for shunt capacitance,

means for determining the zero-sequence current from the healthy line of a section of parallel power lines,

means for calculating a distance to a fault for the parallel line section,

means for calculating a distance from said first end to the fault.

16. (previously amended) The device according to claim 15, further comprising:

means for determining a value for source impedance at said first end,

means for determining a value for source impedance at said second end.

17. (previously amended) The device according to claim 15, further comprising:

means for receiving a measurement of source impedance at said first end.

18. (previously amended) The device according to claim 15, further comprising:

means for receiving a measurement of source impedance made at said second end.

19. (previously amended) The device according to claim 15, further comprising

means to receive a measured value for remote source impedance at said second end

communicated by means of a communication channel.

20. (previously amended) Use of a fault locator device according to claim 15, by a human operator to supervise a function in an electrical power system.

21. (previously amended) Use of a fault locator device according to claim 15, by means of a process running on one or more computers to supervise and/or control a function in an electrical power system.

22. (previously amended) Use of a fault locator device according to claim 15, to locate a distance to a fault in a power transmission or distribution system.

23. (previously amended) Use of a device according to claim 15, for locating a fault on parallel power lines.

24. (currently amended) A computer program product, comprising

a computer readable medium; and

computer code means and/or software code portions recorded on the computer readable medium for making a computer or processor perform ~~any of the steps of claim 1~~ a method for locating a fault from one end of a section of a power line by means of measurements of current, voltage and angles between the phases at a first end of said section, the method comprising

calculating symmetrical components of currents for said current and voltage measurement at said first end,

calculating a value of impedance for an extra link between the terminals with the impedance for the positive sequence equal to:

$(\underline{Z}_{1LB\&AB} = \frac{\underline{Z}_{1LB}\underline{Z}_{1AB}}{\underline{Z}_{1LB} + \underline{Z}_{1AB}})$ where:

$\underline{Z}_{1AB}$ = impedance for the positive sequence of the extra link,

$\underline{Z}_{1LA}$ = positive-sequence impedance of the healthy line,

determining a compensation for the shunt capacitance with the aid of an equation of the form:

$B_2^{comp\_1}(d_{comp\_1})^2 + B_1^{comp\_1}d_{comp\_1} + B_0^{comp\_1} = 0$ where:

$B_2^{comp\_1} = A_{2\_Re}^{comp\_1}A_{00\_Im}^{comp\_1} - A_{2\_Im}^{comp\_1}A_{00\_Re}^{comp\_1}$

$B_1^{comp\_1} = A_{1\_Re}^{comp\_1}A_{00\_Im}^{comp\_1} - A_{1\_Im}^{comp\_1}A_{00\_Re}^{comp\_1}$

$B_0^{comp\_1} = A_{0\_Re}^{comp\_1}A_{00\_Im}^{comp\_1} - A_{0\_Im}^{comp\_1}A_{00\_Re}^{comp\_1}$

determining the zero-sequence current from the healthy line of a section of parallel power lines,

calculating a distance to a fault for the parallel line section,

calculating the distance to the fault from said first end using a quadratic equation of the form:

$B_2d^2 + B_1d + B_0 = 0$ where:

$B_2 = A_{2\_Re}A_{00\_Im} - A_{2\_Im}A_{00\_Re}$

$B_1 = A_{1\_Re}A_{00\_Im} - A_{1\_Im}A_{00\_Re}$

$B_0 = A_{0\_Re}A_{00\_Im} - A_{0\_Im}A_{00\_Re}$ and

locating the fault utilizing the calculated distances.

25. (cancelled)